



CASHEW NEWS

काजू अनुसंधान निदेशालय, पुत्तूर : अर्धवार्षिक वार्ता पत्र
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Happy & Prosperous New Year 2015

FROM THE DIRECTOR'S DESK

Reduviids : Biological Control of Tea Mosquito Bug

Cashew is infested by over 180 insect pests at different phenological stages of the crop. Tea mosquito bug (TMB) *Helopeltis antonii* is one of the major pests damaging tender shoots, inflorescence, immature nuts and apples. In addition, *H. bradyi*, *H. theivora* and *Pachypeltis maesarum* are the other economically important TMB species which attack and inflict economic damage to cashew. The typical damage symptom is formation of necrotic lesions around the point of stylet insertion by the bug. The adjacent lesions coalesce and finally the affected shoot dries up. The infestation of inflorescence results in blossom blight. The immature nuts infested by TMB develop characteristic eruptive spots which shrivel and dry up. The build up of the pest commences during October - November synchronizing with emergence of new flushes and reaches its peak during January when the trees are in full bloom. On an average, yield loss of approximately 30 per cent is caused as a result of damage by this pest.

At present, management of TMB is mainly achieved by application of insecticides. In cashew, increasing awareness on environmental safety warrants strengthening of Integrated Pest Management (IPM) including bio-control of TMB. In cashew plantations, reduviids (Hemiptera: Reduviidae) serve as predators of many insect pests including TMB. It was reported by earlier workers that reduviids can be successfully used as effective biological control agents of



important agricultural pests in India as well as in Southeast Asia and Pacific region. *Endochus inornatus* (Harpactorinae) was reported to prey large number of TMB on cashew in India. Other harpactorines, such as *Sycanus collaris*, *Sphedanolestes signatus*, *Irantha armipes* and *Occamus typicus* also were reported as predators of *H. antonii*. Biological studies on reduviids and their utilization in biological control of insect pests have been gaining momentum globally in recent years. At ICAR-Directorate of Cashew Research (DCR), studies on this direction were initiated to explore the potentiality of reduviids and their utilization in bio-control programme. A total of 18 species of reduviids have been recorded during the exploration. These reduviids are generally seen during the flowering and fruiting periods of cashew that coincides with peak population of TMB. The species viz., *Rihirbus trochantericus*, *Cydnocoris gilvus*, *Endochus albomaculatus*,

Epidaurus bicolor, *Panthous bimaculatus*, *Euagoras plagiatus* *Irantha armipes* and *Sphedanolestes signatus* were the major species encountered in the cashew orchards during the study.



Cydnocoris gilvus Female



Cydnocoris gilvus Male



Sphedanolestes signatus

Attempts were made at ICAR-DCR to rear the reduviids for understanding the biology and predatory behaviour. Upon continuous attempts, it was found that larvae of wax moth can be successfully utilized as prey for laboratory rearing. The studies proved the amenability of the reduviids for mass multiplication and further field release is also found practicable. The predatory potential of the reduviids was studied using functional response study. The number of prey killed by the individual reduviid increased as the prey density increased, thus exhibiting the typical functional response of the second model of Holling's disc equation.

Even though TMB poses serious threat in achieving higher productivity of cashew, farmers

or government agencies give limited attention for the pest management. It is essential to have concerted efforts at national level to popularize plant protection measures. Regular surveillance to identify the initial stages of attack is quite obligatory. Insecticidal management of various foliage pests has been reported to be effective; however it would be unfeasible and uneconomical to adopt control measures in outbreak situations. Research priorities should be focused to determine the economic threshold levels for TMB in order to adopt sound integrated pest management. Gaps in the areas of bio-control of TMB need to be filled up by exploiting the potential of reduviid bugs. Even though they are general predators, life stages of some species exhibit a certain amount of host as well as stage preference. Hence, they should be conserved and augmented effective for utilization in IPM programmes.

(P. L. Saroj)
Director

FOCUS ON RESEARCH

Study of Cashew Germplasm:

**A Genetic Approach G.S. Mohana; M.G. Nayak; E. Eradasappa and R.K. Meena
ICAR-Directorate of Cashew Research, Puttur - 574 202, Karnataka**

Proper assessment of germplasm and its subsequent utilization in crop improvement programs is very crucial for any crop and cashew is no exception. This would also facilitate further systematic exploration for trait specific germplasm. An attempt has been made to assess the variability and genetic architecture of cashew germplasm conserved in National Cashew Field Gene Bank (NCFGB), ICAR-Directorate of Cashew Research (DCR), Puttur, Karnataka. In the NCFGB, 538 clonal accessions collected from 1986 to 2014 are conserved. Preliminary evaluation and characterization was done for 478 accessions (up to 2003 planting) after six annual harvests by referring Cashew Descriptors published by IBPGR (presently the Bioversity International). The evaluated accessions are maintained as active collections in the field gene bank with four softwood grafts per accession and spacing of 4m x 4m under rainfed

conditions by adopting recommended package of practices. Both quantitative (28) and qualitative characters (40) i.e. total 68 characters were recorded on 478 accessions following Cashew Descriptors. Color of mature cashew apple was recorded by referring RHS colour chart. However, in the present study, for data analysis, 13 important quantitative characters of 478 accessions were considered. The desirability and importance of character stems from previous experience in cashew breeding and requirements for further improvement.

The mean, standard deviation, skewness and kurtosis were calculated and frequency distribution was arrived for 13 quantitative characters using Descriptive Statistics option of IBM, SPSS Statistics Ver. 20. Further, correlation among these quantitative characters was worked out using the same software. Considerable variability for all 13

characters was evident by the respective ranges and CVs. However, highest CV (52.21 %) was observed for sex ratio followed by cumulative yield per plant (49.19 %) and apple weight (37.81 %). The lowest CV was observed for shelling percentage (15.15 %) followed by shell thickness (16.83 %). The frequency distribution patterns showed highly positively skewed distribution (Skewness value > 1.0) for characters such as nut weight, sex ratio, apple weight and apple to nut ratio. Genetically, it is evident that decreasing alleles are in excess and dominant for these characters. Whereas characters such as tree spread, kernel weight and cumulative yield per plant showed moderately positive skewed distribution (Skewness >0.5 and <1.0) indicating decreasing alleles are in slight excess and dominant. Flowering intensity showed moderately negative skewed distribution (Skewness >-0.5 and <-1.0) indicating the presence of increasing alleles in slight excess and their dominant nature.

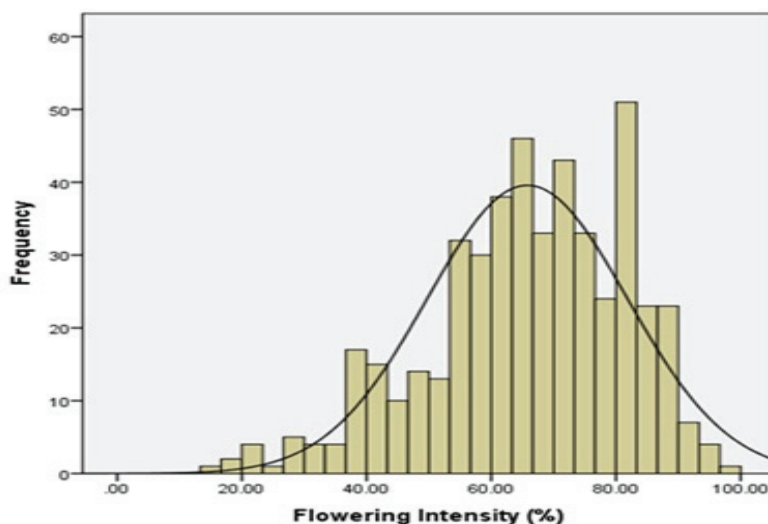
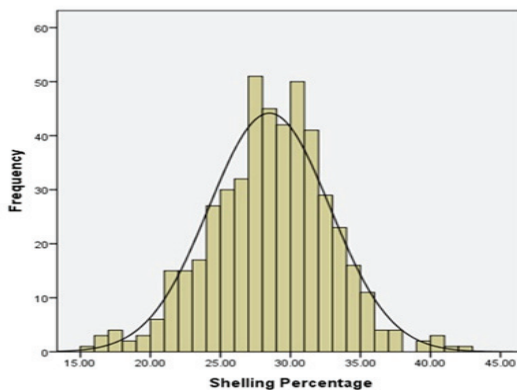
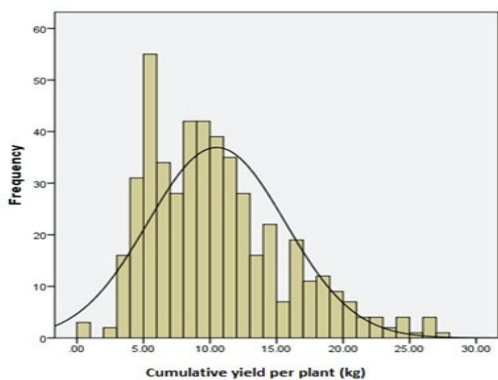
Tree height, shell thickness, flowering duration,

shelling percentage and leaf area showed approximately symmetric distribution (Skewness between 0.5 and 0.5) indicating increasing and decreasing alleles are in equal proportion and the dominance is ambi-directional. None of the characters showed highly negative skewed distribution. Positive kurtosis was observed for most characters except tree height, flowering duration and leaf area, which showed negative kurtosis. The kurtosis for flowering intensity was found to be zero. Significant positive correlations with cumulative yield per plant were observed for tree height, tree spread, sex ratio, flowering duration, apple to nut ratio, shelling percentage and leaf area and significant negative correlation for shell thickness. The present germplasm collection represents sufficient number of accessions for both quantitative and qualitative characters in desired direction (Table 1). However based on the frequency distribution patterns, it is imperative to collect germplasm with dwarfness, less tree spread, high nut weight, apple weight and high yield.

Table 1. Number of accessions for desirable quantitative Character

Character	No. of Accessions	Top Accessions (Character Values in Parenthesis)
Tree Height (< 2.5 m)	5	NRC 153 (1.5), NRC 128 (2.3), NRC 131 (2.4), NRC 100 (2.5) and NRC 239 (2.5).
Tree Spread (< 3.0 m)	4	NRC 153 (1.5), NRC 121 (2.5), NRC 131 (2.7) and NRC 190 (3.0).
Leaf Area (> 120 sq.m)	50	NRC 270 (168.3), NRC 291(159.0), NRC 279 (156.0), NRC 277 (152.0) and NRC 278 (150.3).
Nut Weight (> 7.0 g)	190	NRC 269 (16.78), NRC 183 (15.4), NRC 161 (15.0), NRC 402 (14.2) and NRC 383 (13.4).
Sex Ratio (> 0.13)	74	NRC 60 (0.30), NRC 63 (0.29), NRC 68 (0.27), NRC 279 (0.27) and NRC 278 (0.25).
Weight of Cashew Apple (>100 g)	29	NRC 385(180.0), NRC 301(169.8),NRC 140(142.8), NRC 164 (141.0) and NRC 333 (135.0).
Shell Thickness (< 2.5 mm)	40	NRC 152 (1.5), NRC 153 (1.5), NRC 285 (1.5), NRC 87 (1.7) and NRC 281 (1.8).
Shell Thickness (> 4.0 mm)	16	NRC 160 (4.7), NRC 278 (4.6), NRC 166 (4.5), NRC 180 (4.5) and NRC 270 (4.5).
Flowering Duration (< 60 days)	50	NRC 266 (42), NRC 246 (47), NRC 238 (48), NRC 265 (48) and NRC 221(50).
Flowering Duration (> 90 days)	161	NRC 24 (130), NRC 12 (128), NRC 11 (128), NRC 03 (121) and NRC 20 (121).

Flowering Intensity (> 70 %)	205	NRC 126 (96.8), NRC 175 (95.5), NRC 141 (95.2), NRC 148 (95.0) and NRC 385 (93.7).
Apple to Nut Ratio (< 6.0)	51	NRC 298 (2.0), NRC 156 (3.2), NRC 255 (3.3), NRC 238 (3.4) and NRC 460 (3.6).
Apple to Nut Ratio (> 12)	74	NRC 41 (28.1), NRC 385 (18.9), NRC 370 (18.6), NRC 115 (18.5) and NRC 327 (18.1).
Shelling Percentage (> 28 %)	265	NRC 406 (42.6), NRC 343 (41.0), NRC 393 (40.5), NRC 405 (40.5) and NRC 327 (40.3).
Kernel Weight (> 2.5 g)	62	NRC 183 (4.4), NRC 323 (4.0), NRC 333 (4.0), NRC 160 (3.7) and NRC 409 (3.5).
Cumulative yield (6 years) per plant (> 18 kg)	48	NRC 352 (Ullal-1; 27.53), NRC 457 (Estamol-1; 26.82), NRC 349 (NDR-2-1; 26.21), NRC 356 (Chintamani-1; 26.08), NRC 354 (Ullal-3; 25.95), NRC 465 (Banjha Kusum-1; 24.96), NRC 346 (Vengurla-4; 24.65), NRC 475 (Amrutha; 24.42), NRC 452 (Anakkayam-1; 24.06) and NRC 434 (Petamalapalli-1; 23.70).



PROGRAMMES ORGANIZED

Annual Group Meeting of AICRP on Cashew: 2014

The Annual Group Meeting of All India Coordinated Research Project (AICRP) on Cashew: 2014 was held during 18-20 December 2014 at Agricultural College, Bapatla, Andhra Pradesh. At the outset, Dr. J. Dilip Babu, Director of Research welcomed the delegates and mentioned that there is substantial potential for crop in both coastal sands as well as interior red sandy loams of Andhra Pradesh.

The Annual Group Meeting was inaugurated by Dr. B.M.C. Reddy, Hon'ble Vice Chancellor, Dr. YSR Horticultural University by lighting the traditional lamp. On this occasion, Mr. Vidyasagar Rao, CMWA, Vetapalem and Mr. S.S.B. Raju, Sagi Seeds Pvt. Ltd., Hyderabad were also present as Guests of Honour. Dr. B.M.C. Reddy in his presidential address, mentioned that cashew has been confined to the status of forest produce for a long time. He also suggested that higher number of front line demonstrations need to be taken up to popularize modern cultivation technologies. The occurrence of Hud Hud cyclone, in coastal A.P. had damaged large cashew tracts necessitating ample requirement of quality grafts which need to be catered by the AICRP-Cashew Centres.

Prof. P.L. Saroj, Project Coordinator (Cashew), presented the salient results obtained in field trials of different centres of AICRP-Cashew. He highlighted the efforts in germplasm collection wherein bold nut types and those having higher number of panicles per unit area have been collected. He also mentioned that for improving productivity of cashew orchard, integration of crops like rhizomatous crops, vegetables medicinal and aromatic plants had given promising response. He opined that the

efforts of the AICRP-Cashew centres in producing elite planting material upto 5.0 lakhs and also transfer of technology has led to a wider awareness about scientific cashew technology among farmers. Subsequently, Dr. T.N. Raviprasad, Scientist-in-charge, Project Coordinator Cell presented the Action Taken Report on decisions of the previous year.

The research progress and results obtained in various experiments at different AICRP-Cashew centers viz., Bapatla, Bhubaneswar, Chintamani, Darisai, Jagdalpur, Jhargram, Madakkathara, Paria, Pilicode, Vengurle and Vridhachalam as well as, the co-operating centres viz., Arabhavi and Tura were presented by the scientists of the respective disciplines from each Centre. The presentations were made in three main theme areas viz., Crop



Improvement chaired by Dr. P.C. Lenka, Former Professor, OUAT, Bhubaneswar, Crop Management chaired by Dr. K.R.M. Swamy, Former Head, Division of Vegetable Crops, IHR, Bengaluru and Crop Protection chaired by Dr. V. Ambethgar, Professor of Entomology, TNAU, Tiruchirapalli and co-chaired by Dr. P. S. Bhat, Principal Scientist, ICAR-DCR, Puttur. A separate technical session was organized regarding Interaction of development departments and research centres which was chaired by Dr. N.K. Krishna Kumar, DDG (Hort. Science), ICAR, New Delhi wherein, the local progressive cashew farmers mentioned about their experiences in organic cultivation of cashew and pest management approaches for effective management of cashew stem and root borers and tea mosquito bug. Some of the cultivation related



issues such as poor plant survival and widespread CSRB attack in the sandy soils, lack of effective knowledge transfer generated in field of cashew cultivation not reaching the farmers at the grass root level and non access to market information of

cashew were mentioned by the farmers. Dr. N.K. Krishna Kumar informed that a detailed analysis of present cashew scenario from production, processing to marketing needs to be conducted.

MEETINGS

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Institute Research Committee (IRC) Meeting

The 27th IRC meeting of ICAR-DCR was held during 4-5 July 2014 and 20 October 2014 under the Chairmanship of Prof. P.L. Saroj, Director, ICAR-DCR. Dr. G.S. Mohana, Senior Scientist and Member Secretary welcomed the experts and scientists. Prof. P.L. Saroj, in his introductory remarks denoted the importance of IRC meeting and the need for in detail discussions to be made in research projects. Dr. Mohana, G.S., presented the general recommendations and Action Taken Report of 5th QRT, 17th RAC and 26th IRC meetings. There were technical sessions on Crop Improvement chaired by Dr. P. C. Tripathi, Principal Scientist & Head, Central Horticultural Experiment Station (IIHR), Chettalli, Kodagu district, Karnataka; Crop Management chaired by Dr. Reju M. Kurian, Principal Scientist, Division of Fruit Crops, IIHR, Bengaluru; Crop

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Protection chaired by Dr. A. K. Chakravarthy, Head, Division of Entomology and Nematology, IIHR, Bengaluru; Post Harvest Technology Chaired by Dr. C.K. Narayana, Principal Scientist, Division of Post Harvest Technology, IIHR, Bengaluru and, Transfer of Technology chaired by Prof. M.S. Nataraju, Professor and Head(Agricultural Extension),



Regional Centre, NAEB, University of Agricultural Sciences (UAS), GKVK, Bengaluru. The scientists of the Directorate presented progress made under

Institute Management Committee (IMC) Meeting

The 41st meeting of the IMC was held on 26 September 2014 under the Chairmanship of Prof. P.L. Saroj, Director, ICAR-DCR. The Chairman informed the members about research and achievements of the Directorate. Various



administrative and financial matters were discussed and finalized. Dr. Ramanathan, Principal Scientist, CTCRI, Thiruvananthapuram; Ms. Rekha, Assistant Director (Hort.), Directorate of Horticulture, Govt. of Karnataka, Bengaluru; Shri. T.D.S. Prakash, Finance & Accounts Officer, ICAR-CPCRI, Kasaragod; Dr. T.N. Raviprasad, Principal Scientist, ICAR-DCR; Dr. P.S. Bhat, Principal Scientist, ICAR-DCR; Shri. R. Arulmony, AF&AO In-charge and Shri. K.M. Lingaraja, Administrative Officer In-charge, ICAR-DCR attended the meeting.

Vigilance Awareness Week

Vigilance Awareness Week 2014 was observed at ICAR-DCR, Puttur from 27 October to 1

various projects and technical programme of all the projects was finalized.

November 2014 with the theme for this year as selected by the Central Vigilance Commission 'Combating Corruption-Technology as an Enabler'. The observance of the Vigilance Awareness Week commenced with a pledge administered by Dr. P.L. Saroj, Director, ICAR-DCR and Dr. P.S. Bhat, Principal Scientist and Vigilance Officer, ICAR-DCR to all the employees of the Directorate on 27 October 2014 in Hindi and Kannada, respectively. On 1 November 2014, a special talk was arranged on the theme 'Combating Corruption-Technology as an Enabler' by Shri. Radha Krishna, Branch Manager, State Bank of Mysore, Puttur. Shri. Radha Krishna said advancement of technology like e-government is a means to increase the transparency of public administration. He explained about e-tender and e-procurement which have simplified the process of major purchases in banking sector. The on-line procedures followed in recruitment of various positions in banking sector has helped in transparent and quick recruitment of staff without any corruption. He also talked about the linking of adhar card number with bank account, mobile banking and role of banks in fair implementation of various schemes of the Government. Prof. P.L. Saroj, Director, ICAR-DCR, in his presidential address, stressed that the staff of the Directorate should be more vigilant and should do their job with honesty and integrity. He emphasized upon the need for utilization of the technological development in bringing out transparency in office works.

TRIBAL SUB PLAN

Orientation Training on Establishment of Cashew

Orchards Orientation training on Establishment of Cashew Orchards under Tribal Sub Plan was organized at ICAR-DCR, Puttur on 5 September 2014. A total of 30 tribal farmer participants attended the programme. Dr. M.G. Nayak, Principal Scientist (Hort.), ICAR-DCR welcomed the gathering and presented the objectives of the TSP and expected outcome. The programme was inaugurated by the

Chief Guest Smt. Thulasi Maddineni, IAS, Chief Executive Officer of Dakshina Kannada Zilla Panchayat, Karnataka. Smt. Thulasi Maddineni said those who have taken the benefit under the tribal sub-plan of the Central Government can make use of the national rural employment guarantee scheme to grow mixed crops in their cashew plantations. Added to this, they can also consider taking up bee-



keeping activities in their areas. All these measures will help improve their income levels, she said. She assured of her full support and cooperation for cashew farmers of D.K. district. Smt. Meenakshi Manjunath, Member, Zilla Panchayat, D.K. District, Karnataka suggested the tribal farmers to make the best use of the training and support provided by ICAR-DCR under TSP. She further suggested the farmers to take up cashew cultivation for their own economic and livelihood upliftment and not for the sake of subsidy.

Prof. P.L. Saroj, Director, ICAR-DCR, gave an overview of cashew research and development in India. He urged the beneficiaries to make use of the opportunities to improve the productivity of their orchards. He expressed his view on different research strategies and technologies developed to enhance productivity of cashew. He felt the need of adoption of improved technologies and varietal replacement for sustained cashew production in farmers fields. Sri. K. Subash Rai, a progressive cashew farmer shared his experiences in cashew cultivation. Field visits were arranged at this Directorate and in a



demonstration plot at Kadamajalu village of Puttur taluk, Karnataka. On this occasion, cashew grafts of high yielding varieties were distributed to the tribal



farmers. Dr. P.S. Bhat, Principal Scientist, ICAR-DCR proposed the vote of thanks.

Area Expansio:

Under TSP programme, 24 new Frontline demonstration plots were established in tribal farmer fields of Dakshina Kannada district, Karnataka. The plots were monitored regularly by the team of



Scientists of this Directorate during the period and technical advice was given as and when required.

Exhibitions / Demonstrations:

- 18-20 October 2014 - Krishi Mela organized at University of Agricultural and Horticultural Sciences (UAHS), Shivamogga, Karnataka. This Directorate put up stall to display various cashew production and processing technologies to the farmers.
- 1-3 December 2014 – ICAR-Central

Horticultural Experiment Station (CHES) Golden Jubilee Exhibition at CHES, Chettalli. This Directorate put up stall to display various cashew production and processing technologies to the farmers.

- 10-12 December 2014 - International Symposium on Plantation Crops

(PLACROSYM XXI) organized at ICAR-Indian institute of Spices Research, Kozhikode, Kerala. This Directorate put up stall to display various cashew production and processing technologies to the farmers.

Exposure Visit to ICAR-DCR

Several individual visitors and visitors in batches including farmers, students and officials to the Directorate were taken to various experimental plots, cashew nurseries, cashew museum and laboratories and were appraised of the achievements and technologies developed by ICAR-DCR.

Visitors Category	Organization	No. of Participants	Date of Visit
Farmers	D.K. District, Karnataka	40	5 September 2014
Students	University of Agricultural Sciences, Raichur, Karnataka	37	3 November 2014
Students	College of Agriculture, Gulbarga, Karnataka	40	5 November 2014
Students	College of Agriculture, Mysore, Karnataka	38	14 November 2014
Students	College of Agriculture, Bijapur, Karnataka	42	17 November 2014
Students	College of Agriculture, Bijapur, Karnataka	43	18 November 2014
Students	College of Agriculture, Bijapur, Karnataka	42	19 November 2014
Students	College of Horticulture, Bidar, Karnataka	40	28 November 2014
Students	College of Horticulture, Bidar, Karnataka	38	28 November 2014
Students	University of Horticultural Sciences, Bagalkot, Karnataka	46	29 November 2014
Students	KRC College of Horticulture Arabhavi, Karnataka	64	1 December 2014
Students	University of Agricultural and Horticultural Sciences, Shivamogga	23	2 December 2014

Visit of Dignitaries

Name	Address	Date of Visit
Dr. N.K. Krishna Kumar	Deputy Director General (Hort.Science), ICAR, New Delhi	17 August 2014
Shri. V.P. Kothial	Director (Works), ICAR, New Delhi	28 August 2014
Smt. Thulasi Maddineni, IAS	Chief Executive Officer of Dakshina Kannada Zilla Panchayat, Karnataka.	5 September 2014
Dr. P.J. Bhat	Distinguished Scientist (Retd.) ISRO, Bengaluru	19 December 2014
Shri. V.V. Bhat, IAS (Retd.)	Former Secretary to GOI & Member (Finance) of Atomic Energy, Space and Earth Commissions	19 December 2014

Radio Talks / TV Programmes

Prof. P.L. Saroj	Overview of cashew production – Farmers perspective by Doordarshan-1, Chandana (English) TV channel	15 October 2014
Dr. M.G. Nayak	Agrotechniques to enhance cashew yield by Doordarshan-1, Chandana (Kannada) TV channel	15 October 2014
Dr. M.G. Nayak	Nursery management and grafts production by Doordarshan-1, Chandana (Kannada) TV channel	15 October 2014
Dr. M.G. Nayak	Pruning and canopy management in high density cashew orchards by Doordarshan-1, Chandana (Kannada) TV channel	15 October 2014
Dr. P.S. Bhat	Foliage pests of cashew by Doordarshan-1, Chandana (Kannada) TV channel	15 October 2014
Dr. T.N. Raviprasad	Management of the major pests cashew stem and root borer in cashew orchards by Doordarshan-1, Chandana (Kannada) TV channel	15 October 2014
Dr. M.V. Sajeev	Cashew production technologies as a part of coverage of PLACROSYM XXII exhibition by All India Radio, Kozhikode	10 December 2014

Supply of Planting Material

Around 1,50,000 cashew grafts of high yielding and recommended varieties were produced and supplied to the farmers and developmental agencies.

Technical Publications

Muntiri Sagupadi Thozhilnutpangal (Tamil).

STAFF NEWS

Transfer

- Dr. D. Kalaivanan, Scientist (Soil Science) - Relieved of his duties on 15 November 2014 on his transfer to ICAR-Indian Institute of Horticultural Research, Bengaluru.

Promotions

- Shri. N. Manikandan, Technical Officer - Promoted as Senior Technical Officer w.e.f. 1 July 2012.
- Shri. P. Honnappa Naik, Technician - Promoted as Senior Technician w.e.f. 21 January 2013.

Superannuation

- Dr. Thimmappaiah, Principal Scientist (Genetics and Cytogenetics) – Superannuated on 31 July 2014.
- Shri. S. Ammu Gowda, Skilled Support Staff – Superannuated on 31 August 2014.

Awards / Honours / Recognitions

- Shri. K.K. Srikumar, Senior Research Fellow, ICAR-DCR - Awarded Ph.D. degree in Applied Zoology by Mangalore University, Mangalore, Karnataka. Shri. Srikumar has worked with Dr. P.S. Bhat, Principal Scientist (Agril. Entomology), ICAR-DCR on Biosystematics, comparative biology and management of tea mosquito bug (*Helopeltis* spp.) in cashew (*Anacardium Occidentale* L.).
- Dr. M.V. Sajeev Scientist (Agricultural Extension) - Best paper award for the paper entitled

‘Impact of technology on cashew production: An analysis’ presented in the 7th National Extension Education Congress held at ICAR Research Complex for NEH Region, Umiam, Meghalaya during 8-11, November, 2014.

Visit Abroad

- Dr. M.G. Nayak, Principal Scientist (Horticulture) - Visited Russia as a part of exposure visit of Indian Scientists/Technologists to scientific laboratories / Institutions in Russia under the scheme ‘National programme for training of scientists/technologists working in government sector’ sponsored by Department of Science and Technology, Ministry of Science & Technology (GOI), New Delhi during 13-20 September 2014.

ICAR (South Zone) Sports Meet

The following staff members participated and won the prizes in ICAR (South Zone) sports meet held during 13-17 October 2014 at Indian Institute of Horticultural Research, Bengaluru.



- Shri. P. Abdulla - I prize in Carom.
- Shri. Bojappa Gowda - III prize in Discus Throw.

Cashew Statistics in India : 2013-14

State	Area ('000 ha)	Production ('000 tonnes)	Productivity (kg/ha)
Kerala	84.93	80.12	910
Karnataka	124.11	80.61	750
Goa	57.97	32.35	780
Maharashtra	184.20	236.20	1317
Tamil Nadu	139.42	67.39	669
Andhra Pradesh	184.95	100.42	646
Odisha	166.91	85.71	679
West Bengal	11.16	13.03	1096
Chhattisgarh	13.60	8.75	815
Jharkhand	13.83	4.60	820
Gujarat	7.02	8.86	1020
pondicherry	5.00	3.00	330
Assam	1.00	6.50	720
Tripura	4.20	4.72	615
Meghalaya	8.50	4.72	615
Manipur	0.90	1.50	620
Total	1007.70	736.56	782

Source: DCCD, Kochi

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